

### Trend Study 30-57-03

Study site name: Summit Spring.

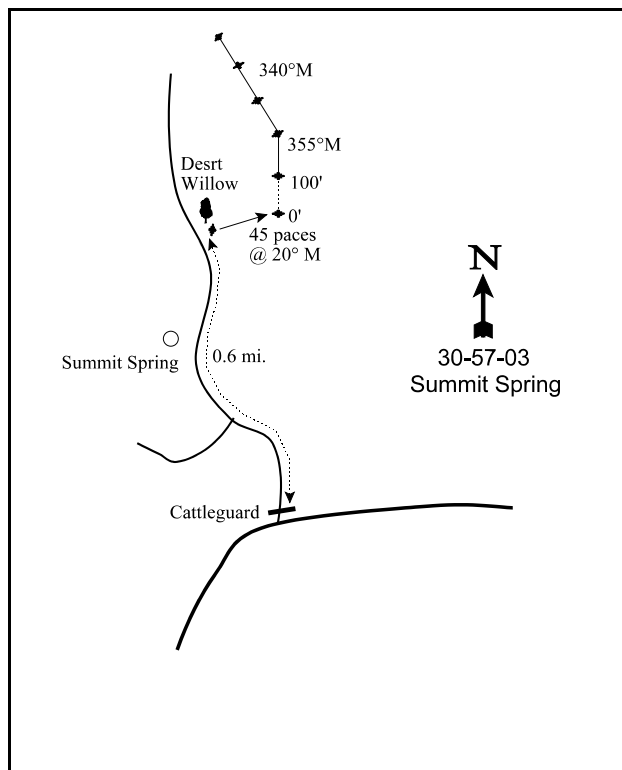
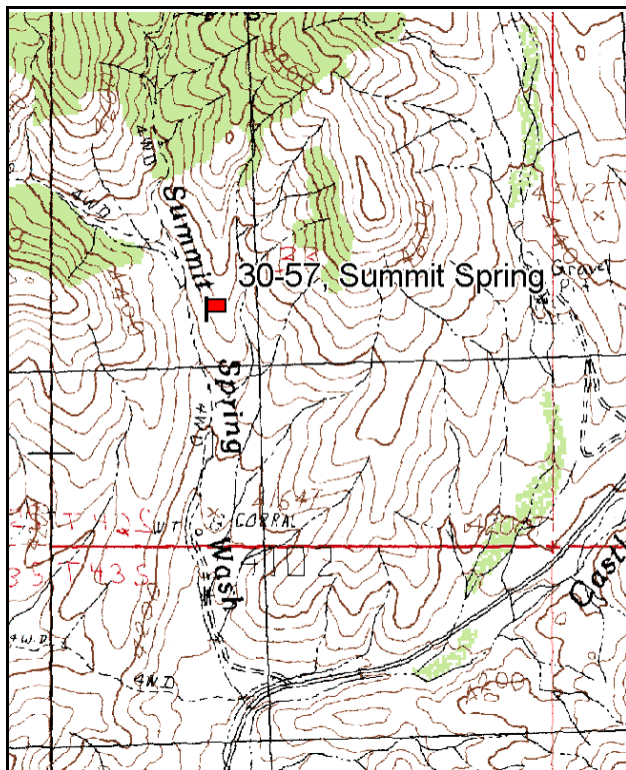
Vegetation type: Black Brush.

Compass bearing: frequency baseline 355 degrees magnetic. (lines 3-5, 340° M).

Frequency belt placement: line 1 (11ft), line 2 (34ft), line 3 (59ft), line 4 (71ft), line 5 (95ft).

#### LOCATION DESCRIPTION

From the Lytle Ranch turnoff, just south of Castle Cliff, proceed northeast for approximately 1.5 miles to a dirt road on the left (north) that leads to Summit Spring. From the highway, go 0.3 miles to a cattle watering trough and corral. Continue 0.3 miles further to a desert willow on the right (east) side of the road. The 0-foot stake is 45 paces at 20 degrees magnetic from the desert willow. The 0-foot stake has browse tag #494 attached. The study is marked by green steel "T" fence posts approximately 12 to 18 inches in height.



Map Name Jarvis Peak

Diagrammatic Sketch

Township 42S, Range 18W, Section 33

GPS: NAD 27, UTM 12S 4108117 N, 244865 E

## DISCUSSION

### Summit Spring - Trend Study No. 30-57

This trend study was established in 1998, and was placed about ½ mile south of Summit Spring. It samples winter range on the southwest side of the unit. The transect samples a desert shrub community. Slope is 25% to 35% with a west aspect and an elevation of about 4,300 feet. The area is grazed by cattle, and cattle were present near the site during study site establishment on June 2<sup>nd</sup> of 1998 and during the 2003 reading on May 20th. A cattle watering trough, which is apparently fed by a pipe from nearby Summit Spring, is found about 1/4 of a mile to the south. Pellet group data estimated a high level of deer use at 61 days use/acre (151 ddu/ha) in 1998 and 76 days use/acre (187 ddu/ha) in 2003. Cow use was estimated at 4 days use/acre (10 cdu/ha) in 1998 and 7 days use/acre (18 cdu/ha) in 2003. Cattle use is higher on the more level areas and along the ridge top.

Soil on the site is relatively shallow and very rocky. Effective rooting depth is estimated at nearly 14 inches. Soil texture is a sandy loam which is neutral in reaction (pH 6.9). Rock and pavement are concentrated on the surface and account for more than half of the ground cover. Some erosion is apparent due to the steep slope but it is localized. Soil temperature was fairly high averaging 73°F at an average depth of nearly 12 inches in 2003. This is about 10 degrees warmer than what was measured in 1998. The difference is due to a dry soil profile caused by drought conditions that have effected this area for the past few years. Precipitation data from Gunlock and Veyo indicate that annual precipitation in 2002 was only about 36% of normal and the spring period (April - June) was only 5% of normal at Veyo in 2002. The spring of 2003 was also very dry, 32% of normal at Gunlock (Utah Climate Summaries 2004).

The site supports 12 shrub species, including the more preferred cliffrose and green ephedra. Blackbrush, slenderbush eriogonum, and desert peachbush also provide browse forage. Cliffrose provides 27% of the browse cover with an estimated density of about 230 plants/acre. Mature plants are large, averaging about 4 feet in height with a crown diameter of over 5 feet. They displayed light to moderate use and good vigor in 1998 with much heavier use in 2003. Vigor is still normal on most plants but decadent plants accounted for 25% of the population in 2003. Reproduction is poor and there was no sign of flowering in 2003.

Green ephedra density was estimated at 680 plants/acre in 1998 and 500 plants/acre in 2003. They have been lightly to moderately utilized. Blackbrush occurs at a low density of about 200 plants/acre. They were lightly browsed in 1998 but more heavily utilized in 2003. Vigor has remained good but reproduction is poor. Desert peachbush is also found at relatively low densities (180 plants/acre), yet on average it contributes 25% of the browse cover. They also displayed light use in 1998 and heavier use in 2003. Drought has obviously effected the population as the number of decadent plants has increased from 0% to 33%.

Undesirable shrubs found on the site include threadleaf snakeweed, Mojave desertrue (turpentine bush), and Datil yucca (banana yucca). Snakeweed was the most abundant with a density of 1,720 plants/acre in 1998. Drought has caused a 80% drop in density to 340 plants/acre in 2003. Seventy-one percent of the remaining population is decadent. Turpentine bush has remained more stable in density. Narrowleaf goldenweed (*Haplopappus linearifolius*) has also been effected by drought. It declined 74% in density in 2003 from 780 to 200 plants/acre. Half of the remaining population is decadent. Juniper trees in the area are also showing signs of stress with yellowing leaves.

The herbaceous understory is very poor and depleted. Cheatgrass totally dominates the understory providing 99% of the grass cover and 79% of the herbaceous cover in 1998. No perennial grasses were sampled on the site in 1998. However, some Indian ricegrass was observed growing under the protection of shrubs. A few Sandberg bluegrass plants were encountered in 2003. The forb component is also poor with storksbill providing most of the forb cover. Other forbs are rare and only a few perennial species were found. Perennial grass and forb cover combined, provide less than one-half of 1% cover. The only dependable forage source for deer or cattle on this site comes from the shrubs, although cheatgrass and storksbill can be utilized in the spring and fall under the right conditions.

## 1998 APPARENT TREND ASSESSMENT

The soil condition is poor. Rock and pavement provides most of the ground cover. Erosion is apparent, yet not severe. Shrubs are diverse and moderately abundant. Preferred species appear stable with light to moderate use, good vigor, and low decadence. Reproduction is limited for most species. The herbaceous understory is very poor and totally dominated by cheatgrass and storksbill. Perennial species are rare.

## 2003 TREND ASSESSMENT

Tend for soil is stable with similar ground cover characteristics compared to 1998. There is some limited, localized soil movement on site yet for the most part erosion is minimal. Trend for browse is considered stable. Preferred shrubs, cliffrose, blackbrush, and green ephedra, show heavier use compared to 1998. Vigor has remained good on most plants. The exception is cliffrose where the number of decadent plants has increased but is not of concern for this species as it commonly goes into and out of periods of decadence. Reproduction is poor this year, yet it is not a problem for a long-lived species. The small population of desert peachbush has remained stable in density even though decadence increased from 0% to 33%. One positive aspect of the browse trend is the 80% decline in snakeweed. Trend for the herbaceous understory is stable yet very depleted. The herbaceous understory is still totally dominated by annuals, primarily cheatgrass and storksbill. Cheatgrass has declined significantly in nested frequency and average cover declined from 22% to 13%. However, cheatgrass still accounts for 92% of the grass cover. Storksbill increased significantly in nested frequency and it provides 75% of the total forb cover. There are very few perennial grasses or forbs on the site except for some Sandberg bluegrass that was encountered in 2003. Due to the lack of perennial herbaceous plants, livestock and wildlife are dependent on shrubs for most of their forage needs.

### TREND ASSESSMENT

soil - stable (3)

browse - stable (3)

herbaceous understory - stable but depleted (3)

### HERBACEOUS TRENDS --

Management unit 30 , Study no: 57

T y p e	Species	Nested Frequency		Average Cover %	
		'98	'03	'98	'03
G	Bromus rubens (a)	a-	b <sup>90</sup>	-	.73
G	Bromus tectorum (a)	b <sup>432</sup>	a <sup>375</sup>	21.97	12.97
G	Oryzopsis hymenoides	-	-	.00	-
G	Poa secunda	a-	b <sup>17</sup>	-	.24
G	Vulpia octoflora (a)	a <sup>4</sup>	b <sup>28</sup>	.00	.18
Total for Annual Grasses		436	493	21.98	13.89
Total for Perennial Grasses		0	17	0.00	0.24
Total for Grasses		436	510	21.98	14.13
F	Aster spp.	6	-	.04	-
F	Compositae	-	2	-	.00

T y p e	Species	Nested Frequency		Average Cover %	
		'98	'03	'98	'03
F	Cryptantha spp.	3	-	.00	-
F	Descurainia pinnata (a)	<sub>a</sub> -	<sub>b</sub> 14	-	.06
F	Draba spp. (a)	8	7	.04	.04
F	Erodium cicutarium (a)	<sub>a</sub> 164	<sub>b</sub> 234	5.59	5.94
F	Eriogonum spp.	-	4	-	.15
F	Eriophyllum wallacei	-	5	-	.03
F	Galium spp.	-	3	-	.03
F	Gilia spp. (a)	<sub>a</sub> -	<sub>b</sub> 50	-	.30
F	Lappula occidentalis (a)	<sub>a</sub> -	<sub>b</sub> 25	-	.16
F	Microsteris gracilis (a)	2	-	.00	-
F	Navarretia intertexta (a)	<sub>a</sub> -	<sub>b</sub> 41	-	.52
F	Oenothera spp.	-	1	-	.03
F	Plantago patagonica (a)	<sub>a</sub> 10	<sub>b</sub> 47	.05	.16
F	Salvia columbariae	5	-	.19	-
F	Sedum lanceolatum	<sub>a</sub> -	<sub>b</sub> 17	-	.26
F	Unknown forb-annual (a)	<sub>a</sub> -	<sub>b</sub> 33	-	.22
Total for Annual Forbs		184	451	5.68	7.42
Total for Perennial Forbs		14	32	0.23	0.52
Total for Forbs		198	483	5.92	7.94

Values with different subscript letters are significantly different at alpha = 0.10

#### BROWSE TRENDS --

Management unit 30 , Study no: 57

T y p e	Species	Strip Frequency		Average Cover %	
		'98	'03	'98	'03
B	Cowania mexicana stansburiana	8	8	5.73	4.96
B	Coleogyne ramosissima	11	8	-	2.01
B	Echinocereus engelmannii	1	1	.03	-
B	Ephedra viridis	17	14	.65	1.97
B	Eriogonum microthecum	0	0	.03	-
B	Gutierrezia microrcephala	45	14	3.47	.31
B	Haplopappus linearifolius	25	8	4.05	.12
B	Opuntia spp.	1	1	.00	.15
B	Prunus fasciculata	5	9	4.85	5.05

B	Thamnosma montana	21	18	.50	1.10
B	Yucca baccata baccata	12	15	2.24	2.42
Total for Browse		146	96	21.59	18.13

#### CANOPY COVER, LINE INTERCEPT --

Management unit 30 , Study no: 57

Species	Percent Cover '03
Cowania mexicana stansburiana	4.58
Coleogyne ramosissima	1.64
Ephedra viridis	1.56
Gutierrezia microrcephala	.20
Haplopappus linearifolius	1.08
Prunus fasciculata	4.88
Thamnosma montana	2.84
Yucca baccata baccata	2.83

#### BASIC COVER --

Management unit 30 , Study no: 57

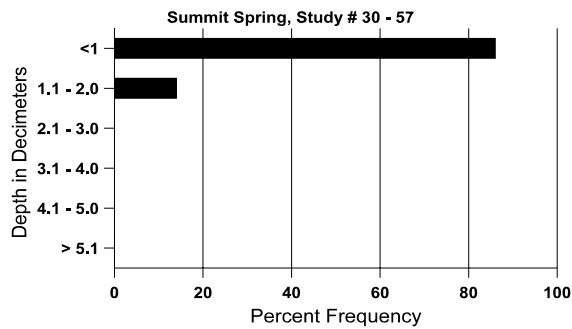
Cover Type	Average Cover %	
	'98	'03
Vegetation	45.40	36.82
Rock	19.40	18.57
Pavement	34.65	32.18
Litter	27.13	24.01
Cryptogams	0	.06
Bare Ground	6.44	6.24

#### SOIL ANALYSIS DATA --

Management unit 30, Study no: 57, Study Name: Summit Spring

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%OM	PPM P	PPM K	ds/m
13.9	73.4 (11.7)	6.9	66.0	21.4	12.6	0.7	10.4	83.2	0.5

## Stoniness Index



### PELLET GROUP DATA --

Management unit 30 , Study no: 57

Type	Quadrat Frequency		Days use per acre (ha)	
	'98	'03	'98	'03
Rabbit	5	3	-	-
Deer	28	27	61 (151)	76 (187)
Cattle	1	6	4 (10)	7 (18)

### BROWSE CHARACTERISTICS --

Management unit 30 , Study no: 57

		Age class distribution (plants per acre)					Utilization				
Y	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
<b>Cowania mexicana stansburiana</b>											
98	<b>220</b>	-	20	200	-	-	36	0	0	0	47/64
03	<b>240</b>	-	-	180	60	-	0	92	25	8	55/77
<b>Coleogyne ramosissima</b>											
98	<b>240</b>	80	-	240	-	20	8	0	-	0	27/46
03	<b>180</b>	-	-	180	-	40	89	11	-	0	32/49
<b>Echinocereus engelmannii</b>											
98	<b>20</b>	-	-	20	-	-	0	0	-	0	11/9
03	<b>20</b>	-	-	20	-	-	0	0	-	0	15/16
<b>Ephedra viridis</b>											
98	<b>680</b>	-	200	420	60	-	29	0	9	6	21/29
03	<b>500</b>	-	20	440	40	-	24	4	8	8	19/29
<b>Eriogonum microthecum</b>											
98	<b>0</b>	-	-	-	-	20	0	0	-	0	18/27
03	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
<b>Gutierrezia microrcephala</b>											

		Age class distribution (plants per acre)					Utilization				
Y e a r	Plants per Acre (excluding seedlings)	Seedling	Young	Mature	Decadent	Dead	% moderate	% heavy	% decadent	% poor vigor	Average Height Crown (in)
98	<b>1740</b>	100	140	1340	260	420	0	0	15	11	16/19
03	<b>340</b>	120	20	80	240	1000	0	0	71	53	15/15
<i>Haplopappus linearifolius</i>											
98	<b>780</b>	20	100	460	220	180	0	0	28	5	22/31
03	<b>200</b>	40	-	100	100	600	0	0	50	40	21/27
<i>Opuntia echinocarpa</i>											
98	<b>0</b>	-	-	-	-	-	0	0	-	0	-/-
03	<b>0</b>	-	-	-	-	-	0	0	-	0	23/15
<i>Opuntia spp.</i>											
98	<b>20</b>	-	20	-	-	20	0	0	-	0	11/12
03	<b>20</b>	-	-	20	-	-	0	0	-	0	12/11
<i>Prunus fasciculata</i>											
98	<b>180</b>	40	-	180	-	20	11	0	0	0	45/67
03	<b>180</b>	-	-	120	60	-	11	22	33	11	48/70
<i>Thamnosma montana</i>											
98	<b>480</b>	20	40	420	20	20	13	0	4	4	16/34
03	<b>400</b>	-	-	340	60	40	0	0	15	15	17/33
<i>Yucca baccata baccata</i>											
98	<b>740</b>	-	-	640	100	80	0	0	14	8	31/39
03	<b>800</b>	-	-	800	-	-	0	0	0	0	30/39